

INTERNATIONAL SEARCH REPORT

International Application No
PCT 03/13676

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, MEDLINE, BIOSIS, EMBASE, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	TSOURKAS A ET AL.: "Hybridization of 2'-O-methyl and 2'-deoxy molecular beacons to RNA and DNA targets" NUCLEIC ACIDS RESEARCH, vol. 30, no. 23, 1 December 2002 (2002-12-01), pages 5168-5174, XP002241701	1-3, 6-10, 13, 14, 18
Y	abstract page 5168, column 2, paragraph 2 - paragraph 3 page 5169, column 2, paragraph 2; table 1 ----- -/--	19

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

27 May 2004

Date of mailing of the international search report

04/06/2004

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00/66604 A (EXIQON AS ;WENGEL JESPER (DK)) 9 November 2000 (2000-11-09) cited in the application	10,13
Y	abstract page 44, last paragraph - page 45, paragraph 3 page 47, paragraph 2 - paragraph 4 page 48, paragraph 3 - page 49, last paragraph; claims 1-5,34-40,45-47,52,55,60-62; figures 2,3; examples 10,11	1,2,4-8, 19
X	MAJLESSI M ET AL.: "Advantages of 2'-O-methyl oligoribonucleotide probes for detecting RNA targets" NUCLEIC ACIDS RESEARCH, vol. 26, no. 9, 1998, pages 2224-2229, XP002241700 cited in the application	10
Y	the whole document	1,2,4-8
P,X	WO 03/020952 A (GEN PROBE INC) 13 March 2003 (2003-03-13) abstract page 7, line 12 - line 17 page 11, line 22 - page 12, line 2 page 24, line 9 - line 24 claims 1-25; examples 5,8	1-14, 16-19

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Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: -

Present claims 4, 5, 11 and 12, relate to a (molecular beacon) probe or the use of such a probe in a diagnostic hybridisation assay within the context of '... the IBF effect...'. The use of that expression is considered to lead to a lack of clarity within the meaning of Article 6 PCT, since it is not a known term/abbreviation within the prior art. Therefore, it is impossible to compare the parameter 'IBF effect' the applicant has chosen to employ with what is set out in the prior art. The lack of clarity is such as to render a meaningful complete search impossible. Consequently, the search of claims 4, 5, 11 and 12, has been restricted to what might be interpreted as to be such an 'IBF effect' from the description, i.e. an increased background fluorescence due to premature undesired opening of the molecular beacon probes.

Present claims 1, 2, 4, 5, 10 and 12, as well their dependent claims, relate to probes comprising nucleotides and/or nucleotide analogues defined by reference to a desirable characteristic or property, namely '...nucleotides and/or nucleotide analogues that have an affinity increasing modification...'. These claims cover all probes comprising nucleotides or analogues thereof having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for only a very limited number of such nucleotide analogues. In the present case, claims 1, 2, 4, 5, 10 and 12, as well their dependent claims, so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the probes by reference to a result to be achieved ('... affinity increasing modification...'). Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, the search has been carried out for those parts of the claims which appear to be clear, supported and disclosed, namely those parts relating to probes/molecular beacons comprising (preferably) 2'-O-methyl nucleotides, or locked nucleic acids (since only these are disclosed and supported by the description and the examples).

Similarly, present claims 1, 2, 4, 5, 11 and 12, as well as their dependent claims, relate to probes, molecular beacon probes, and uses thereof, defined by reference to desirable characteristics or properties, namely their suitability for...

- a) ...lowering the effect of sequence variations in a nucleic acid analyte, and
- b) ...lowering the IBL effect.

Therefore, the claims cover all probes having such characteristics or properties. Since there might exist infinite possibilities of probes potentially possessing such characteristics or properties, and since it is not at all apparent by what possible alterations or modifications a probe would gain such characteristic or property, again the lack of clarity in the present case is such as to render a meaningful search

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

over the whole of the claimed scope impossible (Articles 5 and 6 PCT). Consequently, the search has been carried out for those parts of the claims which appear to be clear, supported and disclosed, namely those parts relating to probes and their uses, as defined above.

Present claims 1-9 and 11, relate to products (molecular beacon probes) partially defined by methodological steps: 'Use...of a probe/Molecular beacon probe for use...', 'which assay comprises the steps of contacting a set of primers and a sample containing the nucleic acid analyte to amplify and detecting the amplified analyte or its complement by means of a probe!'. ...'. That part '...!' of claims 1-9 and 11 does not at all contribute in characterizing the claimed probe by technical features. An attempt is made in defining the probes by steps within a non-related amplification method. Since no potential link exists between such a method and a molecular beacon probe, due to the nature of the latter being a 'detection mean', again a lack of clarity arises for claims 1-9 and 11 (in contrast to Article 6 PCT).

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0066604	A	09-11-2000	AU 4391800 A	17-11-2000
			CA 2372085 A1	09-11-2000
			CN 1349541 T	15-05-2002
			WO 0066604 A2	09-11-2000
			EP 1178999 A2	13-02-2002
			JP 2002543214 T	17-12-2002
			US 2003087230 A1	08-05-2003
WO 03020952	A	13-03-2003	WO 03020952 A2	13-03-2003
			US 2003105320 A1	05-06-2003

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